Kindly add the following new claims 49-94.

-- 49. A permanent magnet synchronous motor comprising:

a rotor; and

a stator having teeth and concentrated windings such that adjacent teeth have different polarities;

wherein said rotor and said stator are arranged such that $0.3\ Lg < La \leq 2.0\ Lg$, wherein:

La is a clearance between said adjacent teeth of said stator; and

Lg is an air gap between said rotor and said stator.

50. The motor of claim 49, wherein said rotor includes a ferrite permanent magnet.

51. The motor of claim 49, wherein said stator includes a divided core.

52. The motor of claim 49, wherein said rotor and said stator are adapted to operate sensor-free.

53. An apparatus comprising:

a compressor in one of an air-conditioner and an electric refrigerator; and

the motor of claim 49 for driving said compressor.

54. The motor of claim 49, wherein said rotor and said stator are arranged such that Lg is not greater than 0.6 mm.

55. A permanent magnet synchronous motor comprising:

a rotor; and

a stator having teeth and concentrated windings such that adjacent teeth have different polarities;

wherein said rotor and said stator are arranged such that 2 Lg < Lb < 5 Lg, wherein:

Lb is a depth of a side edge of each tooth; and

Lg is an air gap between said rotor and said stator.

56. The motor of claim 55, wherein said rotor includes a ferrite permanent magnet.

57. The motor of claim 55, wherein said stator includes a divided core.

58. The motor of claim 55, wherein said rotor and said stator are adapted to operate sensor-free.

59. An apparatus comprising:

a compressor in one of an air-conditioner and an electric refrigerator; and

the motor of claim 55 for driving said compressor.

60. The motor of claim 55, wherein said rotor and said stator are arranged such that Lg is not greater than 0.6 mm.

61. A permanent magnet synchronous motor comprising:

a rotor; and

a stator having teeth and concentrated windings such that adjacent teeth have different polarities;

wherein said rotor and said stator are arranged such that 0.3 Lg < La ≤2.0 Lg and such that 2 Lg < Lb < 5 Lg, wherein:

La is a clearance between said adjacent teeth of said stator;

Lb is a depth of a side edge of each tooth; and

Lg is an air gap between said rotor and said stator.

62. The motor of claim 61, wherein said rotor includes a ferrite permanent magnet.

63. The motor of claim 61, wherein said stator includes a divided core.

64. The motor of claim 61, wherein said rotor and said stator are adapted to operate sensor-free.

65. An apparatus comprising:

a compressor in one of an air-conditioner and an electric refrigerator; and

the motor of claim 61 for driving said compressor.

66. The motor of claim 61, wherein said rotor and said stator are arranged such that Lg is not greater than 0.6 mm.

67. A permanent magnet synchronous motor comprising:

a rotor; and

a stator having teeth and concentrated windings such that adjacent teeth have different polarities, each of said teeth having a leading-side edge and a trailing-side edge with respect to a rotation of said rotor, at least one of said leading-side edge and said trailing-side edge having a bevel formed at a first end closest to said rotor and having a protrusion formed at a second end farthest from said rotor such that each side edge of each tooth is maintained at a substantially constant depth.

68. The motor of claim 67, wherein said rotor includes a ferrite permanent magnet.

69. The motor of claim 67, wherein said stator includes a divided core.

70. The motor of claim 67, wherein said rotor and said stator are adapted to operate sensor-free.

71. An apparatus comprising:

a compressor in one of an air-conditioner and an electric refrigerator; and

the motor of claim 67 for driving said compressor.

72. A permanent magnet synchronous motor comprising:

a rotor having a rotor rim and including a permanent magnet arranged along said rotor rim, said permanent magnet having an outer wall with respect to a radial direction of said rotor, an inwardly-tapered section being formed at each side of said outer wall with respect to the radial direction of said rotor so as to form a recessed section at each side of said permanent magnet; and

a stator having teeth and concentrated windings such that adjacent teeth have different polarities.

73. The motor of claim 72, wherein said rotor and said stator are adapted to operate sensor-free.

74. An apparatus comprising:

a compressor in one of an air-conditioner and an electric refrigerator; and

the motor of claim 72 for driving said compressor.

75. The motor of claim 72, wherein said stator and said rotor are arranged such that $0.10\ As < Am < 0.25\ As$, wherein:

Am is an angle of an arc length of said tapered section at each side of said outer wall of said permanent magnet measured with respect to a central axis of said rotor; and

As is an angle of an arc length of each tooth measured with respect to the central axis of said rotor.

76. The motor of claim 75, wherein said rotor and said stator are adapted to operate sensor-free.

77. An apparatus comprising:
a compressor in one of an air-conditioner and an electric refrigerator; and
the motor of claim 75 for driving said compressor.

78. The motor of claim 72, wherein said permanent magnet has an inner wall with respect to a radial direction of said rotor, said inner wall having a flat face such that a width with respect to a radial direction of a center section of said permanent magnet is greater than a width of a side section.

79. The motor of claim 78, wherein said rotor and said stator are adapted to operate sensor-free.

80. An apparatus comprising:
a compressor in one of an air-conditioner and an electric refrigerator; and
the motor of claim 78 for driving said compressor.

81. The motor of claim 72, wherein said inwardly-tapered section formed at each side of said outer wall of said permanent magnet comprises a bevel formed at each side such that said recessed section is formed at each side of said permanent magnet, said rotor further including a rotor core, said permanent magnet being mounted on an outer wall of said rotor core.

82. The motor of claim 81, wherein said rotor and said stator are adapted to operate sensor-free.

83. An apparatus comprising:
a compressor in one of an air-conditioner and an electric refrigerator; and
the motor of claim 81 for driving said compressor.

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84. The motor of claim 72, wherein said inwardly-tapered section formed at each side of said outer wall of said permanent magnet comprises a bevel formed at each side, said rotor further including a rotor core having a core rim, said permanent magnet being buried in said rotor core along said core rim.

85. The motor of claim 84, wherein said rotor and said stator are adapted to operate sensor-free.

86. An apparatus comprising:

a compressor in one of an air-conditioner and an electric refrigerator; and

the motor of claim 84 for driving said compressor.

87. The motor of claim 72, wherein said rotor further includes a rotor core having a core rim, said permanent magnet being buried in said rotor core along said core rim, said rotor core further including a spacer in said recessed section formed at each side of said permanent magnet.

88. The motor of claim 87, wherein said rotor and said stator are adapted to operate sensor-free.

89. An apparatus comprising:

a compressor in one of an air-conditioner and an electric refrigerator; and

the motor of claim 87 for driving said compressor.

90. A permanent magnet synchronous motor comprising:

a rotor having a rotor rim, said rotor including a curved permanent magnet and a rotor core having a core rim, said permanent magnet being buried in said rotor core along said core rim such that a center of curvature of said permanent magnet is outside said rotor and such that a side end of said

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permanent magnet faces said rotor rim from inside said rotor rim, said rotor further including a spacer formed in said rotor at said side end of said permanent magnet; and

a stator having teeth and concentrated windings such that adjacent teeth have different polarities.

91. The motor of claim 90, wherein said rotor and said stator are arranged such that $Lg < Q < 3\ Lg$, wherein:

Q is a distance between said side end of said permanent magnet and said rotor rim; and

Lg is an air gap between said rotor and said stator.

92. The motor of claim 90, wherein said stator and said rotor are arranged such that $0.10\ As < Am < 0.25\ As$, wherein:

Am is an angle of an arc length of said spacer at said side end of said permanent magnet measured with respect to a central axis of said rotor; and

As is an angle of an arc length of each tooth measured with respect to the central axis of said rotor.

93. The motor of claim 90, wherein said rotor and said stator are adapted to operate sensor-free.

94. An apparatus comprising:

a compressor in one of an air-conditioner and an electric refrigerator; and

the motor of claim 90 for driving said compressor.--